



Sept-Oct 2005

News

AEROSPACE EDUCATION

Inspiring Students to Excel



IN THIS ISSUE

Apogee Books.....	2
AEM Spotlight.....	3
AEO Spotlight.....	4
Region to Region.....	5
AEO News and Views.....	6
Curriculum Corner.....	7

TOPICS OF INTEREST

College Credit	2
Shuttle Liftoff	2
Brief Survey	3
AEF Educator Grants	6
AEO Resources.....	6

Aerospace Education News is the official bi-monthly publication of the Civil Air Patrol and is produced by the Leadership Development Directorate, CAP National Headquarters, Maxwell AFB, Alabama.

Judy Rice AE Deputy Director
Judy Stone Editor
Public Affairs Layout

Contributing Writers:

Kathy Baucum
Jeff Montgomery
Claudine Sayegh
Barry Spink
Beth White

AE Partners. Technical Articles
Printing Service Terry Fontaine and
the CAP Print Plant

If you have news, events, or ideas we might consider for the newsletter, please submit them electronically to jstone@cap.gov.



Civil Air Patrol ~ Aerospace Education

FLY A TEACHER
Program



Soaring Meets Science

Educators from around the country have participated in the Fly A Teacher Program this past year. As Aerospace Education Members (AEMs), these teachers have been involved in hands-on, minds-on activities that they can use in their classrooms to motivate their students in the science of flight. Many have also reinforced these concepts by viewing the world through the cockpit of a CAP airplane.

Those who have been involved in this program this past school year have truly had a memorable experience. Following is a sample of one group that took advantage of this program. According to Maj Emmette Craver in Waco, Texas, "Texas Wing, Group 4, Composite Squadron 148 Commander, David Wilson, made excellent use of the offer afforded by the 2005 Civil Air Patrol Fly A Teacher Program. Teachers from the Waco, Texas area and the Marshall, Texas area were given orientation flights in the CAP Cessna 172 based at Waco, Texas.

The teachers from Brazos Middle School in the Waco area, are teaching science in the

5,6,7 grade levels. They are planning an after-school Science Club with the emphasis on aerospace activities. The Fly A Teacher Program gave them a great head



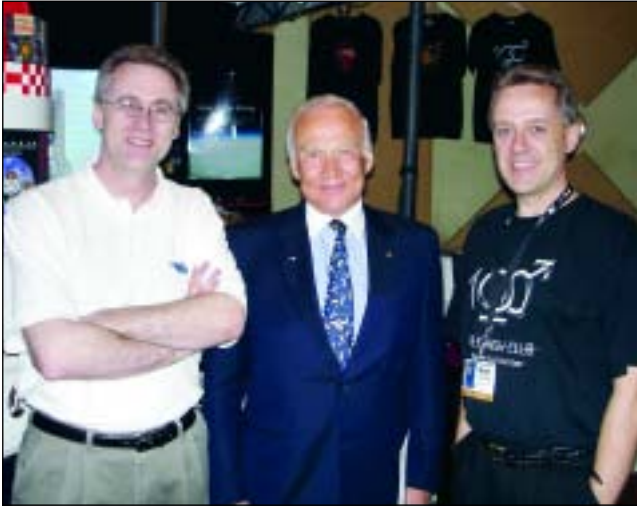
Waco Fly A Teacher Participants

start on understanding some of the basics of aviation. All of the teachers were very pleased with the flight and what they learned from this orientation and introduction to flight."

"All of the teachers were very pleased with the flight and what they learned from this orientation and introduction to flight."

You too can benefit from this program! Join the next group of aerospace enthusiasts to take advantage of the Fly A Teacher Program. For more information on the availability of CAP units that can support the Fly A Teacher Program with flights and workshop assistance, please contact Claudine Sayegh at: claudine.sayegh@andrews.af.mil or by phone at 240-857-0166 today!

CAP Partner: Apogee Books



Godwin brothers with astronaut Buzz Aldrin (center)

Apogee Books is a great supporter of Civil Air Patrol's National Conference on Aviation and Space Education. This company understands the importance of our future in space and the key that educators hold to that future.

Apogee Books is an imprint of Collectors Guide Publishing Inc., which is owned by two British brothers, Robert and Richard Godwin.

Both brothers are interested in the space program and its history. Richard has been a space aficionado since the age of seven, growing up in the United Kingdom, watching the Mercury astronauts and the Apollo moon landings. He has become heavily involved in the US space advocacy groups since migrating to the USA in 1987. He has participated on the board of directors of the Space Frontier Foundation and is currently on the board of the National Space Society.

As the world's foremost space book publishers, Apogee Books continues a tradition of excellence in publishing quality material with the approval of some important names in the space business. The first of Apogee's space books was "Apollo 8: The NASA Mission Reports". Working with names such as Buzz

Aldrin and other NASA greats and Andy Chaikin, the Godwins published the book about the Apollo 8 mission. They added a CD ROM to the second edition of the Apollo 8 book as an added bonus.

Today, Apogee produces over 50 different space titles. Working with NASA's archives, the Godwins have added previously classified materials to enhance their Apollo 11 book. Add CD ROMs and more recently, DVDs and DVD ROMs to the books and you have a recipe for success. The moon landing volumes include interactive pan and zoom panoramas of all of the moon bases with hot spots explaining what each object is within the field of view.

Apogee Books supports CAP and educators across the nation by providing financial support in the form of door prizes and special offers for those attending the National Conference on Aviation and Space Education. We truly appreciate this valued partner and look forward to working together in the future.

College Credit Offered for AEX by Adams State College



In cooperation with Civil Air Patrol, Adams State College in Alamosa, Colorado, is offering one hour of graduate credit to those Civil Air Patrol members who are educators and complete the Aerospace Education Excellence (AEX) Award Program.

Participants in the AEX Program not only receive the one hour of graduate credit for \$45, but also receive an attractive plaque from Civil Air Patrol in recognition of completing the AEX Program. In addition, the students/cadets who participate receive a certificate of completion. This opportunity is also available to any educator who becomes an Aerospace Education Member (AEM) for an additional \$35. To receive more information, contact Beth White at 334-953-5004 or by email at bwhite@cap.gov.



A cheer went up from the NASA family and the nation when the Space Shuttle Discovery made a flawless liftoff and return to space on July 26, 2005 at 9:39 a.m. Central time. On this mission Discovery's seven-person crew demonstrated techniques for inspecting and protecting the Shuttle's thermal protection system and continued assembly of the International Space Station.

Spotlight on AEM Jill Gugisberg Wall



Student with Jill Wall from Farnsworth Aerospace Elementary Magnet School learning about robotic vehicles. Credit: NASA.

Born and raised in St. Paul, Minnesota, Jill Gugisberg Wall has the family background and educational experiences that make her the master aerospace teacher that she is today. From being the daughter of educators (her dad was also a Naval Aviator and Flight Instructor) to her training in science and teaching, Jill has increased her skills and passion for aerospace. Jill graduated from the University of Minnesota with an elementary education degree with a concentration in science. She went on to receive a master's degree from Hamline University after receiving an American Association of University Women Teacher Fellowship to study gender equity issues in math and science.

Jill Wall has truly been an inspiration and motivator to the many students she has touched over the years. She has logistically planned trips and coordinated fund raising projects for students to attend such activities as Space Camp & Aviation Challenge in Huntsville, Alabama, and the Experimental Aircraft Association's Aviation Camp in

Oshkosh, Wisconsin. Jill has planned and carried out numerous Aerospace Family Nights at her school so students and parents could learn together. Tirelessly she has worked to schedule special guests from the aerospace field to give all-school assembly programs. Such names as Astronaut Digger Carey, Aviation Pioneer Dick Rutan, NASA Engineer Ron Caswell, Airshow Performer Jamail Larkins and Astronaut Heidemarie Stefanyshyn-Piper have provided students with a first-hand view into aviation and space.

Among Jill's many accomplishments and activities are: serves as Team Administrator for NASA Explorer School Team; received grants from MN DOT- Office of Aeronautics, Minnesota Space Grant Consortium, 3M Aerospace Division/3M Foundation and many others; awarded American Association of University Women (AAUW) Eleanor Roosevelt Teacher Fellowship; awarded Air Force Association State Teacher of the Year for Minnesota in 2004; member of CAP Aerospace Education Member program, American Association of University Women, American Institute of Aeronautics and Astronautics (AIAA) and Leader in Camp Fire USA for 13

years; current Pre-College Outreach Chair - AIAA Twin Cities; and member of the National Aeronautics Association's Brewer Education Steering Committee in 2002.



Jill Wall with students at Farnsworth Aerospace Elementary Magnet School in an aerospace class.

With a total of 24 years teaching experience, Jill Wall is currently serving as Aerospace Coordinator at Farnsworth Aerospace Elementary School. She is married to a fellow teacher, John, and has three children, Bridget, Eric and Jacob. Jill says (about her undergraduate teaching experiences and professional career), "I have witnessed how hands-on science can really motivate student learning and can be integrated well with all subject areas." We thank Jill and wish her continued success in promoting aerospace education to the children who are our future.

Brief Survey

We would appreciate some feedback from you to help us assess our effectiveness.

Please respond to this survey by email to jstone@cap.gov.

1. Do you use the information and activities in the newsletter?

☐ Yes ☐ No

2. Would you rather have the newsletter sent as a link to the web page by email instead of mailed copy? ☐ Yes ☐ No

Comments:

In the AEO Spotlight....Lt Col Stanley J. Troyano



Lt Col Stan Troyano and cadets from the Twin Pine Squadron work on model rocketry activity.

Loyalty to CAP and Aerospace Education describes Lt Col Stanley J. Troyano's involvement with Civil Air Patrol since he joined in 1990. His son and other cadets encouraged Stan to join the Allentown Squadron and he has been a hard-working asset ever since. When the squadron commander discovered Stan worked in engineering and was in the Air Force before coming to CAP, he immediately gave Stan the job of Aerospace Education Officer. After Stan attended his first NCASE, he really got excited about aerospace education. He met New Jersey Wing's External AEO, Jerry Iacona, and began a friendship and AE partnership that remains to this day. Jerry and Stan had a lot in common including a love of aviation, aerospace, model rockets and education. Together they set up a presentation featuring all of the aviation/aerospace programs and materials that were available from CAP and other aerospace related agencies.

In 1991, Stan and his son transferred to Twin Pine Squadron, where he remained an AEO. He was asked to assume the duty of testing officer

Stan was involved in a model rocketry club in the sixties and later with his nephews and sons. He used his familiarity with model rocket building to involve the cadets in his squadron in the exciting and educational science of rockets. Stan and Jerry were asked to develop a Saturday, one-day program that was so successful they were asked to expand it to a week-long program. They presently have six day camps and four to six week-long camps. They also conduct two dozen school pro-



Lt Col Stan Troyano discusses model rockets with cadets.

grams ranging from assemblies to model rockets and present workshops for the state museum, Veterans Administration, Cub

Scouts, Boy Scouts, Charter Schools and 4-H Aerospace Education. Stan continues his outstanding rocketry program with enthusiasts of all ages today. To quote Stan on model rocketry, "What other subject can teach math, physics, English, writing and history? Besides its educational value, it is fun for everyone, the older guys included. Jerry and I figured out that we easily constructed over 10,000 model rockets and are still counting."

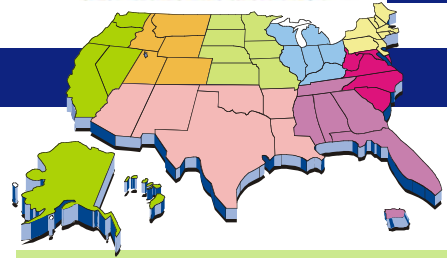


"Ever watch a child's face when they launch their first rocket? It is worth a million. Go aerospace!"

Stan Troyano has taken part in Wing Conferences presenting AE topics, and has taught AE at Squadron Leadership School (SLS), Corporate Learning Course (CLC) and encampments. He has also been a presenter at NCASE conferences in the past and hopes to continue to spread the AE message. He received the Gill Rob Wilson award in March 2003 and also a Wing Commanders Commendation for the Aerospace Education program in his wing. His wing also was rated Excellent in AE on their Compliance Inspection.

An example of the best in CAP AE, Lt Col Stan Troyano says he still has a lot to accomplish and will remain a promoter of the aerospace education mission of Civil Air Patrol for as long as he can. To quote Stan, "Ever watch a child's face when they launch their first rocket? It is worth a million. Go aerospace!"

Region to Region



NORTHEAST REGION

September 10-11

The Great State of Maine Air Show will be held at the Naval Air Station in Brunswick, Maine. For more information, go to www.greatstateofmaineairshow.com/index.htm

September 24-25

The 2005 Daniel Webster College Aviation Heritage Festival will be held at Nashua Municipal Airport (adjacent to the College) in Nashua, New Hampshire. For more, go to www.dwc.edu/news/2005AHFpr.shtml

The twenty-ninth annual New Jersey Science Convention will be held at the Garden State Exhibit Center, Doubletree Hotel and Holiday Inn in Somerset, New Jersey. For more information, go to www.njsc-online.com/

October 20-22

NSTA will hold its Eastern Area Convention in Hartford, Connecticut. For more information, go to www.nsta.org/conventiondetail&meeting_Code=2005HAR

November 3-5

The National Middle School Association's 32nd Annual Conference & Exhibit will be held in Philadelphia, Pennsylvania. For additional details and registration, go to www.nmsa.org/annual05/

MIDDLE EAST REGION

November 17-19

Attend the Virginia Association of Science Teachers (VAST) Annual Science Education Professional Development Institute entitled "The Journey Continues in the Star City". The Institute will take place at the Hotel Roanoke and Conference Center in Roanoke, Virginia. For more on this Institute, go to www.vast.org

SOUTHEAST REGION

September 10

The 2005 Delta Air and Balloon Festival will take place in Greenville, Mississippi at the Mid-Delta Regional Airport. To find out more, go to www.schultzairshows.com/greenville2005.htm

September 30 - October 1

Warbirds Over Montgomery Giant Scale Fly-In will be held at the RAMMS Club Field in Montgomery, Alabama. For more info on this Warbird replica event, go to www.giantwarbirds.org/Warbirds_Over_Montgomery.htm

October 24-25

Mississippi Science Teachers Association Convention will be held at the Crowne Plaza Hotel in Jackson, Mississippi. For registration, go to www.ms-msta.org/

October 29-30

Florida Skyfest at the Daytona Beach International Airport is presented by Embry-Riddle Aeronautical University at Daytona Beach, Florida. For further information, go to www.floridaskyfest.com/

GREAT LAKES REGION

October 1

Grissom Air Museum's Festival of Flight will take place at the Grissom Air Museum in Peru, Indiana. To get details for this event, go to www.grissomairmuseum.com/festival_of_flight.htm

October 19-22

The 41st annual Great Lakes Planetarium Association conference will be held in Grand Rapids, Michigan at the Roger B. Chaffee Planetarium. For details, go to www.glpaweb.org/conference.htm

November 10-12

National Science Teachers Association (NSTA) Midwestern Convention will be held in Chicago, Illinois. For more, go to www.nsta.org/conventiondetail&meeting_code=2005CHI

NORTH CENTRAL REGION

September 10-11

"Fly Iowa 2005" will be held at Clarinda Municipal-Schenck Field in Clarinda, Iowa. For details, go to www.flyiowa.org/fly_iowa_2005.shtml

SOUTHWEST REGION

September 24-25

The 17th annual Fort Worth International Airshow 2005 will take place at Alliance Airport in Fort Worth, Texas. For details, go to www.allianceairshow.com/

October 8-9

The 50th Anniversary of the Little Rock Air Force Base will feature an air show with the USAF Thunderbirds performing. This event will be held at Little Rock Air Force Base (15 miles north of Little Rock, Arkansas). For details, go to www.littlerock.af.mil/05airshow/index.as

ROCKY MOUNTAIN REGION

September 17-18

Silver Wings of Idaho Air Show will be held at Mountain Home Air Force Base, in Mountain Home, Idaho. For additional information, go to www.mountainhome.org/airshow/

October 1 and October 8

Aerospace Teacher Workshop will be held at Hill Aerospace Museum, Hill Air Force Base, in Utah. Go to www.hill.af.mil/museum/current/special.htm for more details.

October 20

Montana Science Teachers Association's Fall Conference will take place in Missoula, Montana. To get further information, email graves@montana.edu.

Region to Region continued on p.6

AEO/AEM News and Views

The Aerospace Education Foundation is offering their Educator Grant program to applicants who promote aerospace education activities in classrooms from kindergarten through twelfth grades. The program encourages development of innovative aerospace activities within the prescribed curriculum. To get an application form or find out more, go to www.aef.org/aid/educator.asp.



AEO Resources On-line

The Aerospace Education Officer (AEO) Briefing Slides and Survival Kit Slides are now on the AEO page of our Website at www.cap.gov/ae. There is also a briefing to present to Aerospace Education Members (AEMs) on the same page. These are a few of the resources that were presented at the National Aerospace Education Officers' School in Pensacola, Florida in July of 2005.



2005 AEO school participants in Pensacola.

If you are a new AEO or just want to know the latest information and help offered to you by National Headquarters and your peers, plan to attend the National AEO School in 2006. Watch the website for next year's school coming in the summer of 2006!

New Rocketry Challenge for 2006

Aerospace Industries Association (AIA) and the National Association of Rocketry present the 2006 Team Rocketry Challenge. The Challenge has been revamped to include both height and time aloft. This event is for middle and high school students. To find out more about this exciting challenge, go to www.rocketcontest.org.

Region to Region

Region to Region (cont.)

PACIFIC REGION

September 14-18

The 42nd National Championship Air Races and Air Show will take place at Reno Stead Field near Reno, Nevada. For more on this exciting event, go to www.airrace.org/indexJS.php

September 30 - October 2

The 25th Anniversary of the Salinas Airshow takes place in Salinas, California. To find out more, go to www.salinairshow.com/

October 22-23

Edwards Air Force Base Open House and Air Show 2005 will take place at Edwards AFB, California. For more information, go to www.edwards.af.mil/openhouse/

October 27-30

The California Science Education Conference will take place in Palm Springs, California at the Palm Springs Convention Center, Wyndham Palm Springs Hotel, and the Hilton Palm. For more information, go to www.cascience.org/conference.html

ITEMS OF INTEREST

Upcoming On-line Educational Programs from NASA Quest

Look for webcast information and Fall, Winter, and Spring Challenges at <http://quest.arc.nasa.gov/>

Sally Ride Science Camps

Girls entering 6th-9th grades can register to attend Sally Ride Science Camps at several California Universities. Go online to find out more about these camps at www.sallyridecamps.com/

Thunderbirds aerial demonstration schedule for September-October 2005

September

- 3-5 Cleveland, Ohio
- 10-11 Portland, Oregon
- 16-17 Reno, Nevada
- 18 Mountain Home AFB, Idaho
- 24-25 Fort Worth, Texas

October

- 1-2 Salinas, California
- 8-9 Little Rock, Arkansas
- 15-16 Travis AFB, California
- 22-23 Naval Air Station-Joint Reserve Base, New Orleans, Louisiana

Curriculum Corner.....Gravity Gauge

From Microgravity (NASA) and adapted by Hawaii Space Grant College, Hawaii Institute of Geophysics and Planetology, University of Hawaii



Background Information:

Suddenly, your stomach feels like it's in your throat. Then your body is squashed downward into the seat. You start to climb back up and suddenly you're thrown to the left, then to the right. Are you in some kind of torture machine? Sort of... It's really just a roller coaster!

As your roller coaster car goes up and down and makes sharp turns, your body feels the same forces that astronauts feel as they travel into space. These are called "G" forces. "G" stands for "gravity." Each time you change direction or speed, it feels as though the pull of gravity has changed. Sometimes the pull is more and sometimes less. But the gravity you feel on a roller coaster isn't really changing. It just feels like it does.

Another good example of when it seems like gravity has changed is when you dive off a diving board. As you reach the top of your dive, you feel "weightless," as though gravity had disappeared. But suppose you do a belly flop? The full force of your fall will make it seem like gravity has gotten much stronger. (Ouch!)

When astronauts travel into space, they feel those same forces. During liftoff, astronauts are pulled back into their launch seats. It feels as though gravity has gotten much stronger. (Some astronauts say it feels like an elephant is sitting on their chest!) When their spaceship is in orbit, it's like when you're at the top of your dive. Gravity feels like it has disappeared. When their spacecraft reenters (comes back through) the Earth's atmosphere, it feels like gravity has gotten much stronger again. Like your belly flop!

Objective:

Students will make a simple accelerometer to measure "G-forces" when you change your motion.

Grade Levels: 5-8

National Science Standards:

Content Standard A:
Science as Inquiry

- Abilities necessary to do scientific inquiry
- Understandings about scientific inquiry

Content Standard B:
Physical Science

- Motions and forces

Unifying Concepts and Processes

- Constancy, change and measurement

Materials:

- a cardboard tube (one from a roll of wax paper works well or a small mailing tube)
- two rubber bands
- three lead fishing sinkers (1/2 to 1 ounce each)
- cardboard
- scissors
- masking tape
- marker pen

Procedure: (Building and Calibrating your Gravity Gauge)

1. Cut out a rectangular-shape window from the cardboard tube that is about 3/4" wide and 8" long. If the tube is about 12" long, then the window will be cut about two inches in from either end. Then trace the end of the tube on the flat sheet of cardboard and cut the circle out. Cut out another circle the same way and tape one circle to each end of the tube.
2. Cut each rubber band in half and tie both rubber bands together. Punch a small hole in the middle of the cardboard circles at each end of the tube. Thread an end of the rubber band through each hole and knot it.
3. Attach one sinker to the middle of the rubber band in the tube. Stand the tube upright and mark the side of the tube where the sinker stays as "1-G."
4. Temporarily attach a second sinker to the first. The second sinker should pull the rubber bands down farther. Mark the new position of the sinkers as "2-G." Now add the third sinker and mark the new position as "3-G." Remove the second and third sinkers.
5. Turn the tube upside down and attach the sinkers the same way you did before. But this time mark the sinker positions as "minus 1-G," "minus 2-G," and "minus 3-G."
6. At the middle of the tube, halfway between "1-G" and "minus 1-G," mark the position "0=G."
7. Remove the two temporary sinkers. Your accelerometer is finished. Ready to try it?
8. Hold the accelerometer upright in front of you and jump up as high as you can. What happened to the position of the sinker as you jumped up and came down?
9. How many G-forces did the accelerometer say you felt?
10. Try using the accelerometer on a fast elevator - or better yet, on your favorite roller coaster. Remember, these are the same G-forces astronauts feel as they rocket into space.

Curriculum Corner.....Gravity Jugs

(Submitted by Maj Steven Heffel, PAO Beartooth Composite Squadron)

For complete activity description, go to <http://www.nsschapters.org/hub/gravityjugs.htm>

(This activity can be used as a demonstration or display)

Objective:

This display is a great visual for understanding that Mars and the Moon have different gravity than Earth.

Grade Level(s): All ages

National Science Standards:

Content Standard B: Physical Science

- Motions and forces

Unifying Concepts and Processes

- Evidence, models, and explanation

Materials:

- Three jugs (48 oz.) with handles: These can be empty, cleaned out bleach jugs or half-gallon milk or juice jugs.
- Some styrofoam peanuts
- Water

Background Information:

Because the moon has less mass than the Earth, it has a smaller gravitational effect. On the surface of the moon, the level of gravity is only about one-sixth of that on Earth. A person who weighs 100 pounds on Earth would weigh only 17 pounds if they stood on a scale on the moon.

Here are the statistics on Earth, Moon, and Mars:

Earth

Diameter 12,756 km
Day 23h 56m 04s
Sidereal 365.256 days
Gravity(Earth=1) 1.0

Moon

Diameter 3,467 km
Day 27d 07h 43m
Sidereal 27.332 days
Gravity(Earth=1) 0.16

Mars

Diameter 6,790 km
Day 24h 37m 23s
Sidereal 687 days
Gravity(Earth=1) 0.38

Procedure:

1. To prepare jugs:

Earth Jug: fill with water

Moon Jug:

- Start with empty jug
- rinse
- fill with styrofoam peanuts
- then add only 1 cup (8 ounces) of water (1/6th of 48 oz.)

Mars Jug:

- start with empty jug
- rinse
- fill with styrofoam peanuts
- then add only 2 1/2 cups (18 oz) of water (3/8ths of 48 oz.)

2. Replace labels with ones located at

http://www.nsschapters.org/hub/gravjug_labels.htm

These labels will give all pertinent information. Earth is bigger than the Moon and Mars and so has the greatest gravity. The Moon is the smallest of the three and so has the least.